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ABSTRACT

This report examines the relationship among school expenditures, educational reforms, and school achievement in South Carolina. It discusses the social factors affecting school-district wealth, such as population, income, and the number of single parents, and compares these factors to school districts' expenditures on education. Data for the study were collected prior to 1992 by the South Carolina Department of Education. The data included self-reports and surveys and were drawn from 91 school districts in the state. Three comparisons were made between expense per pupil and (1) average teacher's salary; (2) wealth per pupil; and (3) average reforms per school. Findings show that neither the correlation between average teacher salary and expense per pupil nor the correlation between expense per pupil and average reforms per school were statistically significant. However, the correlation between wealth per pupil and expense per pupil was significant. The independent factor of school expenditures and two dependent factors of fourth-grade achievement showed significant negative relationships. Higher expenditures per pupil and school reforms were not likely to increase student achievement. The article concludes that more research on cooperative learning and the expenditures of high- and low-achieving school districts is needed. (Contains 14 references.) (RJM)

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The schools in South Carolina have executed several grim and several optimistic outcomes during the 1990's. The number of AP exams increased from 6,262 in 1985 to 13,124 in 1995. And, the number of students in gifted-and-talented programs in the 3rd through 6th grade also climbed from 17,986 to 55,827 during that period (Johnston, 1997). Scores on the Basic Skills Assessment Program, a statewide test in math, reading, and science for students in grades 3, 6, 8, and 10, improved as well. For example, the first-time pass rate for 10th graders taking the high school exit exams in math, reading, and science rose from 55% in 1986 to 65% in 1995. And, between 1981 and 1991, the percentage of students passing the tests improved in grades 3, 6, and 8 by as many as 28 points. In spite of these positive gains, South Carolina educators continue to encounter the persistent educational problems from poverty, finance disputes, stagnant test scores among minority groups, and faltering system-wide reforms (Johnston, 1997).

Improvements in the test scores have been difficult to sustain, particularly for minority students. Between 1989 and 1994, the percentage of students passing standardized examinations dropped in almost every category. For example, in 1989, 78% of 6th graders passed the writing test; by 1994, the figure had fallen to 69%. In science, 46% passed the test in 1990, while 44% did so in 1995. Students in grades 4, 5, 7, 9, and 11 also take the norm-referenced Metropolitan Achievement Test, which compares their performance with that of a national sample.

Some scores in South Carolina improved slightly overall between 1995 and 1996, but far greater percentages of minority students tested in the bottom quartile than did white students. In the testing situation in the 11th grade, 12% of white students finished in the bottom quartile in combined reading, math, and language scores compared with 40% of

black students; 36% of white students scored in the top quartile vs. 8% of black students (Johnston, 1997). One research study analyzed the relationship between school incentive grants and student and teacher outcomes, and attendance. However, the results showed only modest improvements in student outcomes and no significant improvements in attendance for either students or teachers. The data did show, however, there was a relationship between socioeconomic data of schools and predicting the incentives for the schools in South Carolina schools (Richards, 1992).

The Educational Policy Core in South Carolina

Policies directed to improving the schools began when South Carolina took steps toward statewide school reform with the Education Finance Act of 1977. That state law guaranteed basic school funding and instituted statewide academic testing (Johnston, 1997). A sweeping and better-known reform policy was the 1984 Education Improvement Act (EIA), which was sponsored by then-Governor Richard W. Riley, who is now the U.S. education secretary. EIA policy raised graduation requirements and increased teacher salaries 16% to bring them in line with the regional average. It also required districts to offer half-day kindergarten, Advanced Placement exams, and programs for gifted students (Michel & Woodbury, 1987). Many changes took place since the EIA was enacted.

To study these problems, five policy areas related to improving schools in the South Carolina were be examined. The first is to identify the social characteristics that may contribute to understanding how much school districts spend on education of children in their charge. The second area is about teacher quality and if it plays a part in the testing outcomes of the schools. Third directly bears on school expenditures and its relation to the multitude of school reforms that have been implemented. The fourth area is associated to

school reforms. And, the last is to determine if these four areas are related to school achievement test scores.

Some clarification in these areas come from several reports. One account on school expenditures and achievement finds strong relations between the two factors. It also points out negative consequences of these related factors (NWREL, 1997). Chubb and Moe used school expenditures and student achievement between test the relations of the two factors. They found that more school spending focused on more teachers created smaller classes, and produced higher school achievement (Chubb &Moe, 1990).

Spending and S.C. School Reform Policies

This study represents an exploration of relations of factors of school expenditures, educational reforms, and school achievement in South Carolina. The social factors related to the amount of wealth in the school district are: the county population, income, and the number of single parents in a school district. These factors are compared to the wealth a school district and the expenditures on the education of students in the school district boundaries (South Carolina Department of Education, 1992).

Data collection for the study was collected prior to 1992 by the South Carolina Department of Education. Both the data on school reforms and the test scores for the G4 Stanford 8, 3Rs were collected from self-reports and surveys. At that time in 1992, there were 92 public school districts. A total of 640, 222 students were enrolled in 1,071 elementary, middle and high schools. Among the total population of students, 41.3% are African American, 57.4% are Caucasian, and 1.3% other ethnic and racial groups (South Carolina Department of Education, 1992).

Data was collected by the Department of Education in Columbia. S.C. Statistical

profiles were designed for each county about attributes of the population, family characteristics, income levels, and the industrial base. Each county profile is followed by a school district profile in that county. Information included about school districts was school characteristics, student data, school finance facts, and achievement data (South Carolina Department of Education, 1992).

The sample includes data from the population of 91 school districts in the state at the time of publication of the South Carolina Department of Education report. First, several factors from the economic, social, and family factors from each county were selected. Measures of school expenditures and school reforms also were adopted. Then, two student achievement measures became the basis for the comparisons of wealth, spending, reforms and school achievement.

Output Achievement Scores

The social factors were not significantly related to wealth per pupil or expenditure per pupil. In contrast, average teachers' salary is significantly related to wealth per pupil in the sample school districts at > .05. The data showing no significant relationships among social and spending factors contradicts other research. However, the significant relationship between average teacher salary and wealth per pupil among the sample school districts may support a relationship to the quality of the teachers in South Carolina public schools. Table 1 shows the Spearman Rho correlations for the resource factors related to wealth per pupil in forty-seven counties and 91 school districts.

A significant relationship between teachers' salary level and the wealth per pupil confirmed the need for answering other policy questions. One question is about the factor of teacher's salary: is the teacher's salary, wealth per pupil, and expenditure per pupil

related to the average number of reforms per school. Another policy research question is: is wealth per pupil related to expenditure per pupil in South Carolina. And, the final research question is: are these factors related to student achievement of students in the ninety-one school districts in South Carolina.

There were two test scores used as measures of educational achievement. Both were portions of tests administered to fourth graders. One is the mean percentage of students scoring above the national median. The other is the mean percentage of students within fourth quartile of the Stanford 4, 3Rs. This achievement test is the combined score in mathematics, science, and social studies given at the 4th grade level.

A measure of reforms in this study is the mean school reforms per school in each

Table 1

Correlation Coefficients of School Resources Related to Wealth per Pupil in South Carolina School Districts, 1992[a]

Resource Factor	N	Spearman Rho	p
County Population	47	-.02	.90
Percent of Population with College or Professional Degrees	47	-.05	.72
Percent of One-Parent Families	47	.18	.27
Per Capita Income	47	-.07	.63
Average Teacher's Salary in School Districts	47	.57	.00 *

a. Data Source - South Carolina Department of Education. (1992) South Carolina education profiles, Columbia, S.C.: South Carolina Department of Education.
* - Statistically significantly at the .05 level or greater.

of ninety-one school districts. A survey of seventeen reforms in the schools of the forty-seven counties of the state was conducted (South Carolina Department of Education, 1992).

Three comparisons between Expense Per Pupil and (1) Average Teacher's Salary, (2) Wealth Per Pupil, and (3) Average Reforms Per School are examined. The correlation between Average Teacher's Salary and Expense Per Pupil is not statistically significant. Similarly, the correlation between Expense Per Pupil and Average Reforms Per School is also not statistically significant. On the other hand, the correlation between Wealth Per Pupil and Expense Per Pupil is significant at >.001. These outcomes reject the idea that Average Teacher's Salary and Average Reforms Per School are meaningful factors for increasing school achievement. The other factor, Expense Per Pupil, is accepted as a factor for consideration as a variable related to school achievement. See Table 2 for these comparisons.

Expenses, Teacher Salaries, and Reforms Are Not Effective

The independent factor of school expenditures and two dependent factors of 4th grade achievement showed significant negative relationships. Higher expenditures per expenditures per pupil and school reforms are not likely to increase student achievement. Table 3 shows the Spearman Rho correlations for the resource factors related to wealth per pupil in forty-seven counties and 91 school districts.

Conclusions

Explaining the current findings also led to other work on school expenditures (Hanushek, 1995). Hanushek's conclusion is that the traditional ways of spending school funds are wasteful for raising school achievement levels. Further, if administrators are

Table 2

Correlation Coefficients of School Resource, Expense per Pupil and Teachers Salary, School Reforms, and Wealth Per Pupil Related to in South Carolina School Districts, 1992[a]

Resource Factor	N	Pearson's r for Expense Per Pupil	p
Average Teacher's Salary in School Districts	91	.03	.76
Average Reforms Per School	91	.08	.44
Wealth Per Pupil in School Districts	91	.40	.00 **

a. Data Source: South Carolina Department of Education. (1992) South Carolina education profiles, Columbia, S.C.: South Carolina Department of Education.
b. Sample includes data from the population the population of 91 school districts in the state at the time of publication of the South Carolina Department of Education report.
* - Statistically significantly at >.05
** - Statistically significant at >.001

using school moneys in unwise ways, Hanushek thinks that the reason is because of poor educational policies. He maintains that the relation between student performance and school achievement is still the central question in South Carolina. Hanushek reviewed the available educational spending literature and updated previous summaries. In his review of nearly 400 studies of student achievement, he found no strong or consistent relationship between student performance and school spending. This is true at least after variations in family inputs are taken into account. These results are also reconciled with analytic approaches and other investigations on how school resources affect the labor market. Generally, simple educational policies hold little hope for improving student achievement (Hanushek, 1997). But, Hanushek concludes that as a whole, the U.S. is spending more

and the results from student achievement tests are no better than in the past. According to Hanushek, tests scores have fallen slightly over the long term. He laments that schools

Table 3

Correlation Coefficients of Expense per Pupil to the Factors and Test Scores of Fourth Graders on the G4 Stanford 8, 3Rs Tests in South Carolina School Districts, 1992[a]

Resource Factor	N	Pearson's r for Expense Per Pupil	Significance Level
Percent of Students Scoring Above the National Median of of the G4 Stanford 8, 3Rs	91	-.24	.02*
Percent of Students Scoring Within the National 4th Quartile of the G4 Stanford 8, 3Rs	91	-.22	.04*

a. Data Source: South Carolina Department of Education. (1992) South Carolina education profiles, Columbia, S.C.: South Carolina Department of Education.
b. Sample includes data from the population the population of 91 school districts in the state at the time of publication of the South Carolina Department of Education report.
* - Statistically significantly at > .05.
** - Statistically significant at >.001.

continue to ask for more moneys for education (Hanushek, 1995).

Analyses in one report on school expenditures suggest that there are substantial differences between the cost of educational resources and student achievement in schools. High levels of school spending create high achieving schools, but it also contributes to schools that are not only separate but decidedly unequal. The study by the Northwest Regional Education Laboratory did not assess what school dollars actually buy in terms of programs and service (NWREL, 1997). But, it does point to the importance of these factors in school achievement.

Other research disagrees with Hanushek's conclusion about how school expenditures affect student achievement. Another study used educational expenditures to show that more school spending produces increased student achievement. The study explained average characteristics of schools in the highest quartile of academic achievement (Chubb & Moe, 1990). The conclusion is consistent with common wisdom. The study found that there was a relationship between school expenditures and student achievement. The correlations were large enough to show that school expenditures are predictors of school achievement. When achievement gains were averaged, the high achieving schools spent twenty percent more per pupil than low achieving schools. The study found achieving school districts attracted better qualified teachers. Nevertheless, it showed that the high achieving school districts hired more teachers. The high achieving school districts had a lower student-teacher ratio, 13.8 students per classroom while low achieving school districts had a higher student-teacher ratio of 15.7 per classroom.

When compared, the low achieving school districts had to hire 14 percent more teachers. They also had to increase their budgets by seven percent to gain the same favorable student-teacher ratios as the high achieving school districts (Chubb & Moe, 1990). This study proved that school policies directed toward reducing student - teacher ratios would be one way that school expenditures could be focused on improving school achievement. Increasing the number of teacher aides and hiring more teachers to reduce student-teacher ratios should increase student achievement. It showed that added expenditures should be directed toward the development of the teaching staff. Added resources should also be directed to purchasing instructional materials. It proved that decreasing the class size in a low achieving school would lead to increased student

achievement.

Certainly, there are disagreements with studies of educational policies considering school expenditures directed toward teachers. In particular, expenditures on staff development for teachers, new learning structures, and new curriculum materials have been questioned. Many studies of school expenditure and school achievement also dispute the results of the Chubb and Moe study. They point to the controversies in educational policies about the relationship between school expenditures and student achievement. They question the validity of traditional educational policy studies. They also express doubts about whether simple solutions would have any chance of raising school achievement in school districts.

However, one suggestion for enhancing effective educational spending showed some promise of attaining higher achievement scores. Those policies focused on developing improved curricular structures showed improved student achievement. Slavin has been studying cooperative learning for more than a decade. His suggestion for raising the achievement levels in the schools is to introduce teachers to the concept of cooperative learning (Slavin, 1996). This team-learning approach for the classroom invokes students working in four or five member groups. It replaces tests with quizzes, class presentations, individual improvement scores and team recognition. Each group has represented high, average, and low achieving students, boys and girls, and different social and economic backgrounds. Teams are evaluated on both individual and group bases (Williams, 1996).

There are several reasons for considering the findings of the current study tentatively. The data was collected in 1992. Test scores was collected from each schools district at the same time. Since 1992, there also have been several steps taken by the state

legislature to develop policies directed toward overcoming the burdens of improving test scores. In 1996-97, the legislature boosted the state school budget by $200 million, the highest single-year increase in more than a decade. Since 1992, the state legislature continued to develop remedial policies to cope with its public school problems. It developed other reform policies by increasing technology in the classrooms, making schools more accountable to the public, and emphasizing state-wide goals for the schools. In June 1998, the governor also approved the School Accountability Act of 1998. The legislation mandates smaller classes in the early elementary grades. Nearly $20 million is allocated for hiring more teachers in the primary grades in low achieving school districts (State, 1998). Education became the centerpiece of the new governor elected in November, 1998 , Two program changes took place that should have profound effects on education. The first is maintaining the implementation of new curriculum standards, aligned with the National Assessment Educational Progress (NAEP), including reading English, Language Arts, Math, and Science (South Carolina Department of Education, 1998) The second is the on-going effort to implement the Palmetto Achievement Challenge Test (PACT), a new, more rigorous, criterion referenced test in all subjects. The third is the reduction of class-size in grades one to to three with a pupil-teacher ration of 1:15. And, the fourth, is a program for universal preschool education called First Steps, borrowed from a neighboring state (Blair, 1998).

However, as an exploration, this study raises some legitimate points about education in South Carolina. One certain point is how do school districts spend money. Is the spending on high and low achieving districts different? Another point is that more research on educational expenditures of high and low achieving school districts and

cooperative learning is needed. Replication of the study by Chubb and Moe (1990) using high and low achieving school districts in the state would answer several of the questions about school district spending and the contribution that teachers make to educational achievement.

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